New Jersey ASTRONOMICAL Association

The Journal

The quarterly journal of the New Jersey Astronomical Association

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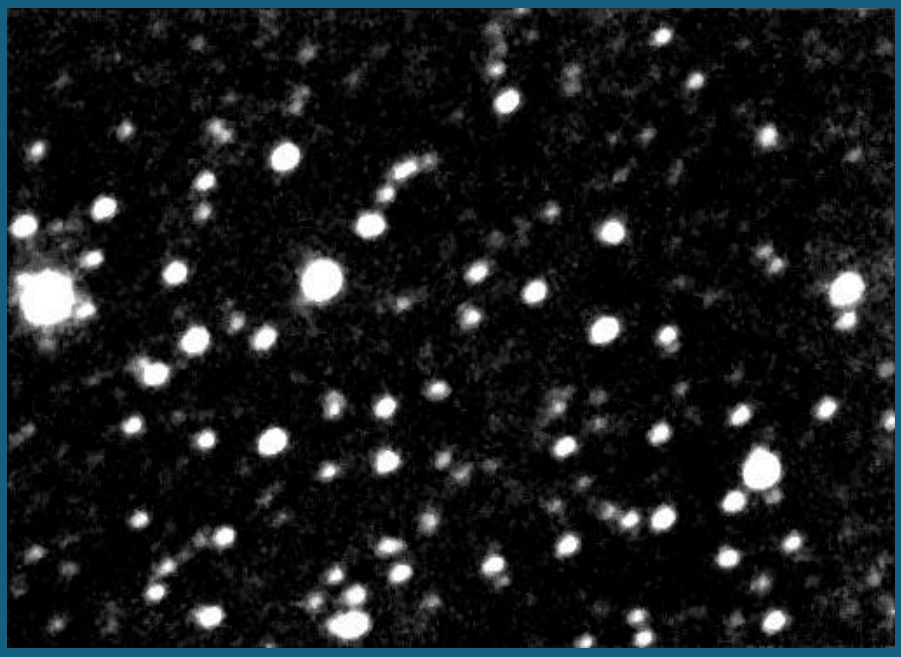
Cosmic Researcher – Advanced researchers & professionals.

Can You Find The Visitor From Another Solar System?

By Stephen D Blazier

See video HERE



3I/ATLAS by Stephen D. Blazier, Paul Robinson 26-inch Cassegrain f/12.5, July 19, 2025 UT, 195 30-second exposures.

Hints: It looks like a star. It's faint. It's moving!

On July 1, an ATLAS telescope in Chile saw a distant object hurtling towards our sun at incredible speed. Alerts went out around the world for large telescopes to try to find this faint object and learn more about it. They confirmed it came from another solar system. How do we know? It is travelling so fast that our sun's gravity cannot hold on to it. They named it 3I/ATLAS since it is only the third object to pass through our solar system known to come from interstellar space.

The video above shows 3I passing before *(Continued)*

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crowded stars near the heart of our Milky Way Galaxy. It kept low to the horizon, so the stars twinkle a lot. Like planets in our solar system, 3I shines with reflected light from our sun. The stars behind it glow with their own light, like our sun. 3I is much closer to us than those stars, so its movement sets it apart.

Editor's note: ATLAS is an acronym for the ominous-sounding "Asteroid Terrestrial-impact Last Alert System." The Chilean ATLAS telescope is one of four in the world, with two others in Hawaii and the fourth in South Africa. These telescopes scan the entire sky several times each night looking for moving objects.

Comet Double Feature

By John Barbecane

One of the highlights of 2024 was the arrival of comet C/2023 A3 (Tsuchinshan–ATLAS) or ATLAS A3. For many of us, this was the first time seeing a comet through a telescope. It was easy to see why Charles Messier was so obsessed with them. Comets certainly are a unique and rare sight to behold. These remnants of the formation of the solar system visit us from its outer reaches, attaining their glowing coma and brightly defined tail as their orbit takes them near the sun, which was the case last October with ATLAS A3.

Figure 1: Comet Atlas A3 viewed from the NJAA Observatory on October 19, 2024. Photos by NJAA member Erin Zapken.

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After all the fun we had viewing Atlas A3, it left me wondering when the next opportunity to view a comet would occur. How long would we have to wait for another one? I was very pleased to find out that not only one, but two comets are coming our way this Fall as well!

The first of these is C/2025 R2 (SWAN) which was just discovered in September 2025 by Ukrainian amateur astronomer Vladimir Bezugly from images obtained from the SOHO spacecraft's SWAN camera.

The closest it will come to Earth is expected to happen on October 19, 2025 with a distance of approximately 0.26 AU. At that point, it could brighten to a magnitude of around 4, making it potentially visible to the unaided eye under dark skies. Comets however are notoriously unpredictable, so this may be on the optimistic end of the range.

The best way to view SWAN R2 is just after sunset in the southwest sky between October 18 and October 21. Figure 2 shows the expected path from High Bridge NJ.

Figure 2: Path of SWAN R2 in the south and southwestern evening sky.

On October 21, it splits M16 and M17 (coming closer to M16, the Eagle Nebula), where it may be possible to see both objects in the same field of view. October 21 happens also to be a new moon.

The other is Comet C/2025 A6 (Lemmon A6), which was recently discovered by the Mount Lemmon Observatory in January of 2025. It will make its closest approach to Earth on October 21 at a distance of about 0.60 AU. The comet should be visible in New Jersey from late October through early November and could reach a magnitude between 2 and 5. From late October to early November, Lemmon A6 should be visible for about an hour or two after sunset in the western sky. Figure 3 on the next page shows the *(Continued)*

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comet's path through these dates. The best viewing should be on the night of the new moon when it is just above Arcturus in the constellation Boötes.

Figure 3: Path of Lemmon A6 in the western evening sky.

If all goes well, both of these comets will be visible in our southern and western skies with binoculars or small telescopes.

My Journey into Astronomy

By Melanie Ayala

I'm a self-proclaimed astronomy geek. I have always loved anything to do with stars, planets and galaxies. What really made me enjoy this field was the nostalgia. The fact that a person can look up at the same star someone in the past looked at is romantic in an eerie sort of way. What really made star gazing a staple for me is the fact that my father and I used to do it every night until he passed away when I was 13. Being able to look up was a way to stay connected with him because I knew that those were the same stars he was once able to look at. The idea that today, many years later, looking at those same stars just helps me not to feel his absence as much.

When the opportunity presented itself for me to take Astronomy classes in college, I jumped into action. It was a pleasant surprise to discover that I loved the science and how it all made sense to me. Unfortunately, my life circumstances did not allow for me to make anything to do with Astronomy a career path. Nevertheless, I took my classes in stride and tried to soak in as much knowledge as I could. This was over 10 years ago, and I have not been able to keep up with all the new discoveries since. In between the crazy workdays, restless obligations, and lazy moments, I have been able to dabble into some things here and there and try to stay as current as I can. *(Continued)*

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In April 2025, my mother told me about a NASA Solar System Ambassador Event at Wagner Farm Arboretum. I was more than happy to go with her, my husband and my friend. The feeling of excitement filled within me as I approached those lovely telescopes. How splendid it was to see my old celestial friends live, up close, and personal!

We were also greeted with smiling faces of members from the NJAA who were (and still are) incredibly friendly and more than willing to engage in conversation. It was a no brainer when we were asked to become members. After everything was signed, sealed and delivered, I immediately began to feel the dreaded imposter syndrome. Who am I to add anything to this amazing and very well-established organization? Do a few classes at community college really make me a sort of star savant? Who do I think I am? Meanwhile, the kindness and patience from my fellow star lovers have been nothing short of encouraging.

My intention in writing this article, and others soon to come, is to track the progress of a newcomer at entry level. Hopefully, this will encourage others (hey, maybe that's you!) to join the New Jersey Astronomical Association. We can all be newbies and embrace the unknown together! After all, we all need to start somewhere, don't we? So here I am, about 3 months into my membership. I can't wait to share my experiences with you! I'm also looking forward to seeing how my horizons will be expanded, the pun is totally intended!

An Invitation to Share Your Journey

As we launch *The Journal of the New Jersey Astronomical Association*, we are opening a new chapter in how we share our collective passion for the night sky. This publication belongs to all of us—it is a canvas for the stories, discoveries, and images that make our community so unique.

Astronomy is more than science—it is an experience. Some of us peer through an eyepiece for hours, coaxing out faint nebulae or galaxies. Others spend long nights with digital cameras capturing deep-sky images or tracking elusive trans-Neptunian objects. Our radio astronomy team listens for faint whispers of hydrogen line emissions from across the cosmos, while our youngest members take their first steps in learning the constellations. Each of these moments, whether rooted in data or in wonder, is worth sharing.

I invite you to write. Tell us about the science behind your astrophotography image. Share the thrill of your first clear view of Saturn's rings or tell us about the process of deciphering signals received with our 10' radio dish.

Offer advice for those beginning their journey into astronomy or present your research *(Continued)*

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that connects our observatory to the larger astronomical community. Every perspective adds light to our shared night sky.

By contributing, you ensure that this Journal becomes more than a newsletter—it becomes a constellation of voices, experiences, and ideas. And just as the stars guide us when the night is dark, your words and images will guide others to new inspiration.

So, aim your telescope, open your notebook, and let us hear "your" story. Together, we will make this Journal a reflection of our mission: "to teach everyone about the science of astronomy".

And as we always say, with both hope and gratitude for our membership, “Clear Skies!”

Jim Roselli
President
New Jersey Astronomical Association

Wagner Farm Astronomy Event Pulls Hundreds

By Bill Funcheon

As many as 400 members of the public got a first-hand view of the cosmos through a range of instruments at each of two Wagner Farm Arboretum star gazing events held May 10 and September 26.

The events in Warren, NJ, were organized and hosted by Bill Funcheon, NASA Solar System Ambassador (SSA) and longtime New Jersey Astronomical Association (NJAA) member.

More than 25 NJAA members participated, providing over 50 telescopes of every type. *(Continued)*

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The 400+ members of the public who attended, enjoyed views of the moon, Saturn, the Andromeda Galaxy, star clusters, and nebulae. A special treat occurred at 8:06 pm, when the International Space Station flew overhead.

The NJAA tent, managed by Membership Coordinator Brian Della Pesca and SSA/NJAA member Paul Cirillo, and assisted by Hiren Khakharia, provided information about the club and the NASA SSA program.

The club signed up more than 30 new members at the last two events! This is the third star party that Bill has hosted at this location, and the township is very interested in continuing the program. Plans are underway to identify the next date.

The generosity of club members was greatly appreciated by the public, whose enthusiasm and curiosity were impressive. There were non-stop questions about the nature of the Milky Way, our place in it, and how to view and photograph it. While observing distant objects, people young and old were in awe of what they saw. Seestars were recommended as an easy and affordable way to get started in the hobby, as was getting involved with NJAA.

NJAA General Meeting Programming

By John Andrews

Our October 25th General Meeting speaker will be NJAA member Gary Donahue. His topic will be Shoemaker-Levy 9, the comet that struck Jupiter.

We will soon begin the search for speakers for our 2026 season.

If you have possible speaker, contact information or topics that you would like to see presented, please contact John Andrews, jjandrews@att.net.

Here is a brief rundown of our past 2025 General Meeting speakers:

March . . . Dr. Kelly Fast. Officer in the Planetary Defense Coordination Office at NASA Headquarters. She studies and plans responses to the asteroid impact hazard.

April . . . . Dr. Les Johnson. Science Fiction author and NASA technologist who worked on the Solar Sail missions.

May . . . . . Alan Witzgall. Optics specialist who contributed to various NASA missions. His topic: *The Meteorite that Impacted the Chesapeake Bay.*

June . . . . Dr. Dakotah Tyler. University of California, Los Angeles. Exoplanet demographics that have changed our view of how planetary systems work.

July . . . . .Sarah Terracina. Aerospace Engineer at Draper Laboratory. NJAA member when she was young and former President of the Metuchen High School Astronomy Club. Sarah shared her path to aerospace engineering.

August . . . Dr Lauren Seyler. Professor of Microbiology – Stockton U. Research Scientist at the Blue Marble Space Institute of Science. Dr. Seyler shared her oceanographic work with reference to how life may have emerged on Earth and elsewhere in the Universe.

September . . . Kimberly Burtnyk, technical editor, writer and liaison between the scientific community and general public. She presented a virtual tour of LIGO - the Laser Interferometer Gravitational-wave Observatory (where she is presently serving as science writer). LIGO is a breakthrough double observatory located in Washington State and Louisiana designed to detect cosmic gravitational waves.

Getting the Most from Your Seestar. (Time is on your side)

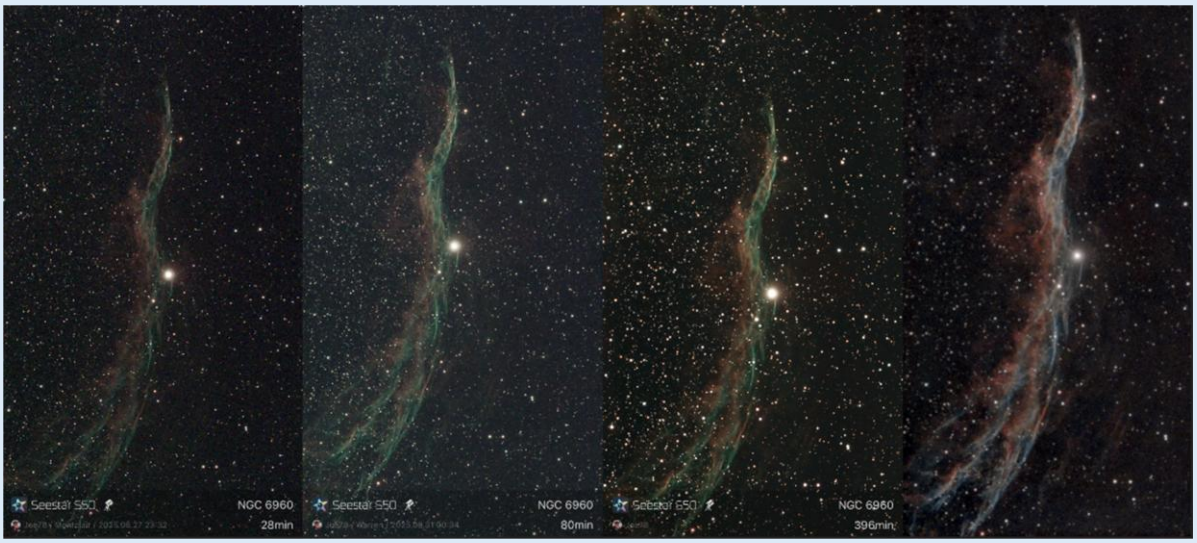
By Joe Link

For someone, like me, who is new to astrophotography, the Seestar has been a miracle device. Small in size, the Seestar is big in capability. I'm amazed that I can use my phone app to tell the Seestar to find a galaxy in my bright (Bortle Class 7) suburban sky and it will go to the object and start taking photos.

As good as the Seestar images are after only a few minutes of capturing a distant nebula or galaxy, I've wondered whether I can get even more out of this little telescope. Toward that end, I've begun experimenting with two things: time and processing.

Time—Deep sky objects are too faint and too far away to see with the naked eye. When a Seestar takes an exposure of a nebula for 10 seconds to 30 seconds, not much is revealed. But the more time you spend capturing additional images of the deep sky object, the more detail you will see. That's because the Seestar "stacks" all your photos. Think of each photo as a transparency. Laying all those transparencies on top of one another amplifies the amount of detail, or "signal" from the object. The more exposures you have, the more signal you have from the object. You can even stack images taken over several nights to increase the signal.

I've illustrated this with the below composite of four images of the Western Veil Nebula (NGC 6960).



- The first image is a stack of 28 minutes worth of 30-second images, or 56 images.
- The second image is an 80 minute stack of 160 images. You can see a bit more detail.
- The third image is 396 minutes of exposures, or 792 images taken over several nights. The detail in the image is better still. All three photos were processed in the Seestar.

Processing—For the fourth image, I downloaded all 792 of my images from the Seestar and processed them in free external software. I was astonished at how much more detail could be revealed. I've learned there are many ways to enhance the detail in your image with applications such as Deep Sky Stacker, Siril and GraXpert. In future issues of The Journal, I can provide some basic instructions that a beginner like me can try. For now, I just wanted to show what's possible.

Solar System Ambassador's Corner

By Paul Cirillo

The NASA Solar System Ambassadors program is a public engagement effort that works with motivated volunteers across the nation to communicate the science and excitement of NASA's space exploration missions and discoveries with the people in their communities.

Currently there are more than 1,100 volunteers reaching more than 11 million people through both live and online events in their communities.

NJAA members – Bill Funcheon and Paul Cirillo are volunteers with this program.

Learn more about: NASA's Solar System Ambassadors

What is JPL?

The Jet Propulsion Laboratory (JPL) is a research and development lab federally funded by NASA and managed by Caltech (California Institute of Technology). The Ambassador Program is managed by JPL.

JPL holds a unique place in the universe. They are a leader in robotic space exploration, sending rovers to Mars, probes into the farthest reaches of the solar system, and satellites to advance understanding of our home planet.

Recent News

Mars Rover Discovers Potential Biosignature

A sample collected from an ancient dry riverbed in Jezero Crater by NASA's *Perseverance* Mars rover may have preserved evidence of ancient microbial life. The rock sample, called "Sapphire Canyon," contains potential biosignatures, according to a paper published in the journal *Nature*. A potential biosignature is a substance or structure that might have a biological origin but requires more data or further study before a conclusion can be reached about the absence or presence of life. *(Continued)*

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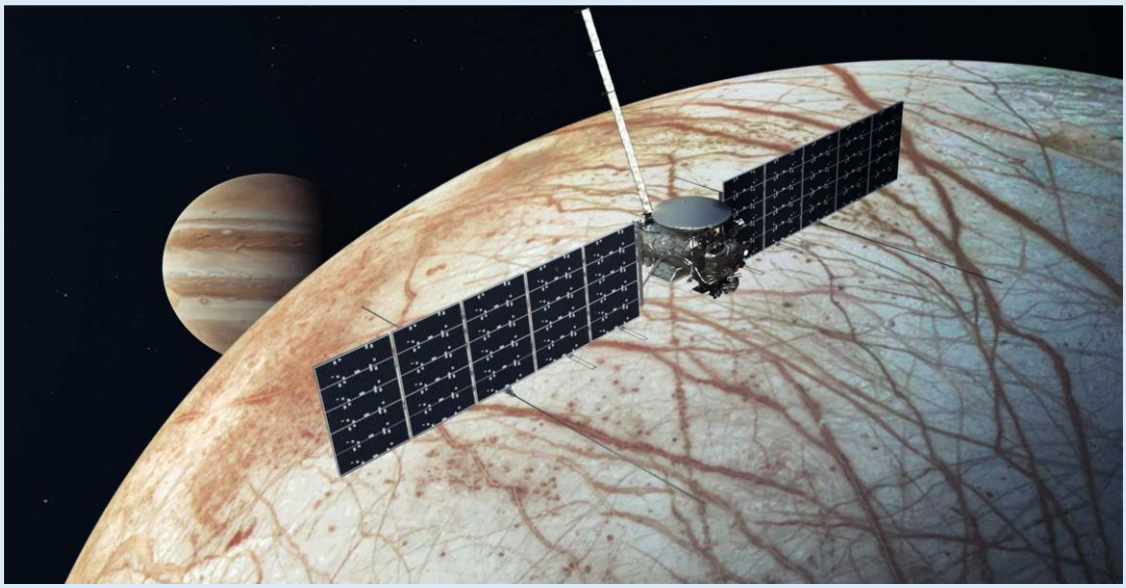
Europa Clipper

NASA's Europa Clipper, launched Oct. 14, 2024, will conduct detailed reconnaissance of Jupiter's moon Europa and investigate whether the icy moon could have conditions suitable for life.

The mission will place a radiation-tolerant spacecraft in orbit around Jupiter to perform a detailed investigation of Europa -- a world that shows strong evidence for an ocean of liquid water beneath its icy crust and which could host conditions favorable for life.

Europa Clipper is expected to enter Jupiter's vicinity in April 2030.



Space & Science @ Spruce Run 8/22/25

By Brian Della Pesca

Earlier this year, the New Jersey State Park Service invited us to host events at Spruce Run Recreation Area (Spruce Run) during 2025. Since it had been several years since we held an off-site program in the park, we were excited to re-launch this initiative. We are fortunate to maintain a strong partnership with the State Park Service.

Together, the NJAA and the Park Service organized a local event at the Spruce Run boat launch area on August 22, 2025: "Space & Science @ Spruce Run." This free, public event brought together more than 14 volunteers who set up approximately 17 telescopes for a community star party by the water.

The evening was calm, clear, and cool—perfect for stargazing. About 150 attendees joined us, and we were pleased to welcome 4 new members and receive $52 in donations. Feedback was overwhelmingly positive, with many guests expressing amazement at the telescope setup and the expertise shared by NJAA

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astronomers. As an added highlight, a dazzling Starlink display—including several geosynchronous satellites and a recently launched satellite string—lit up the sky.

We would like to thank all of the volunteers who made this event possible: Paul Cirillo, Eric Kolodziejski and family, Ron Urioste, Pranesh Kirubakar, Ashwin Krishnamurthy, Ashkat Krishnamurthy, Greg Buniak, Jim Butler, Max Pike, Michael Sweetman and family, Rich Zepernick, Victor Payne, Melanie Vayda, and Sean Vayda. Their time, effort, and enthusiasm helped ensure the evening's success.

Looking ahead, the State Park Service has approved two additional events for next season: one in early spring and another in late summer. Hope to see you there!

Quick Hits

By Michael Sweetman

Recent developments confirm the "Hubble Tension". The "Hubble Tension" refers to different values for H_O, the coefficient of expansion of the universe, depending on the method of measurement. The two most common methods of measuring H_O involve working from the "outside in," that is, measuring the doppler shift (red shift) of the cosmic microwave background radiation; or working from the "inside out," that is, building a distance ladder using combination of parallax measurements and "standard candles", objects with known brightness such as Cepheid variables or Type Ia Supernovae. These two methods have produced different estimates for H_O, although historically the error bars overlapped, leaving open the possibility of measurement error. Over time, the error bars have shrunk, and it is becoming less likely that these two methods of measurement can be reconciled to a single estimate. Recently, results released by the Atacama Cosmology Telescope (ACT) collaboration and by a team working with the James Webb Space Telescope provided evidence to further tighten the error bars of both methods, and it is looking more likely that the current model of the universe, with a constant rate of expansion, is not correct. https://www.scientificamerican.com/article/the-hubble-tension-is-becoming-a-hubble-crisis/

Discovery of a Potential Biosignature on Mars. NASA recently announced that the Perseverance rover retrieved a sample last year that contains a potential signature of life that may have existed long ago on the red planet. While exciting, this is still a long way from proving the existence of extraterrestrial life. Discovery of the potential biosignature is merely the first step in a seven-step model, that includes conclusively ruling out contamination and natural but non-living processes. https://www.nasa.gov/news-release/nasa-says-mars-rover-discovered-potential-biosignature-last-year/

The NJAA Journal

The NJAA Journal is the quarterly publication of the New Jersey Astronomical Association.

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Membership Outreach Committee Report

By Brian Della Pesca

Our current membership is approximately 415 members. This season started around 370 members. The increase in membership is the direct result of the many programs, outreach events, and educational classes offered by our members. The goals for our Outreach Committee this year were to create more opportunities for members to get together (in-reach) as well as our goal last year to reach out to the local community at events. The NJAA was successful in attaining these goals through several astronomy events through the year.

The Palingenesis of Astronotes — The Journal of the New Jersey Astronomical Association

By Brian Della Pesca

At the Wagner Farm Arboretum in May, the NJAA booth was set up on a beautiful evening, and a steady line of visitors came by to talk with our volunteers about astronomy and the organization. Interest in the event was strong. One couple, in particular, had many questions about becoming volunteers. They joined that very night and expressed a desire to contribute beyond regular membership. At the time no ideas came to mind, but we knew the observatory always needs dedicated volunteers to take on larger roles.

As we normally do after outreach events, we entered new members into our system. Once added to the member spreadsheet, each new member receives a welcome handbook. In the back of that handbook is a list of volunteer opportunities at the observatory—including one for *Astronotes* Publisher.

Shortly after joining, Melanie Ayala reached out to the membership team asking if she could help with *Astronotes*. Little did she know that *Astronotes* had not been published since 2020.

Several factors had led to its pause, most notably the pandemic. With limited content and few events happening, there wasn't enough material to publish a full journal. Post-pandemic, the NJAA focused its efforts on rebuilding membership and community outreach, which naturally took priority over publication.

The question—"How can we restart *Astronotes*?"—sparked new energy. Collaboration was key. As both Melanie and I were new to the observatory, we proposed the idea to the Board of Governors (BOG). Their response was enthusiastic—they were eager to see the journal return and offered to submit content from their various areas of expertise. Most of which we hoped you enjoy in this quarterly.

From there, we formed a Journal Committee consisting initially of Melanie and myself. We had plenty of enthusiasm but few concrete ideas, so we held a committee meeting to invite others to join the effort in July. Twelve members attended, and together we developed a plan to relaunch *Astronotes*.

The first major goal was to shift the observatory's image—from simply a club of astronomy enthusiasts to a true science and educational center for the community, which had always been our charter. We combed through sixty years of *Astronotes* archives (available in the members' section of our website) for inspiration. One of the first proposals was to rename the publication to *The Journal of the New Jersey Astronomical Association* to reflect the initiative. Plus, it sounded cooler.

We reached out to members conducting research in areas such as Trans-Neptunian Objects, astrophotography, and radio astronomy to gather contributions. To modernize production, we expanded the committee to include Jim Roselli, whose skills as webmaster were invaluable for digital formatting and online publication. He created a form for submitting articles to The Journal.

Then came the missing link—Joe Link. With a strong background in publishing, Joe's arrival helped shape our scattered ideas into a cohesive, professional publication. (And with a name like "Joe Link," you can't help but imagine a news ticker running in the background!). The overall look of the journal and editing are the result of his ideas. Joe's hard work and experience were instrumental in bringing the JONJAA to life.

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The final addition to the team was Bob Starcher, whose editorial skills are legendary around the observatory—he's known for polishing even casual emails. Bob's attention to detail and editorial precision made him the perfect choice for Editor.

The JONJAA will be published quarterly, an email will be sent to membership four times a year requesting articles that people would like to submit. Any member may send submissions to the journal. You can see the result when five members collaborate. What could be achieved when 438 members collaborate is nothing short of astronomical.

And so that's the story of how our JONJAA Committee—Melanie, Joe, Jim, Bob, and myself—came together, motivated by a shared goal and countless hours of collaboration. The result is what you see today: the rebirth of *Astronotes*, now *The Journal of the New Jersey Astronomical Association*. We hope you enjoy *The Journal* and we hope you will join us in future publications

Beginning Telescope Observing with the NJAA Telescope Loaner Program

By Michael Sweetman

The NJAA Telescope Loaner Program is a member benefit available to all club members that is intended to help introduce members to visual telescope observing. In this article, I will go over a few basics, explain why we chose the telescopes we did, and discuss some practical observation tips.

1. Safety First

Using a telescope during the day (before sunset) to look at the moon is safe but should be done with caution to avoid the sun. You should never point a telescope near sun. Our 6" to 8" telescope loaners gather orders of magnitude more light than the unaided human eye. This means that damage to your eye with a telescope can happen 100s of times faster than merely looking at the sun with an unaided eye. Permanent damage can happen in fractions of a second. Personally, when I want to observe the moon during the day, I look for a shaded spot, such as behind a wall or tree that blocks the sun. Observing is more pleasant in the shade, and there is zero chance of accidentally pointing at the sun.

Observing the sun must be done by using a telescope that is fitted with a dedicated solar filter that covers the entire aperture (opening at the front of the telescope). Prior to using these filters, they should be inspected to ensure that there are no scratches or holes that would compromise them. Also, while they are no longer manufactured, there were eyepieces that claimed to be solar safe. These should never be used. There were also threaded "sun" filters that could be attached to the bottom of an eyepiece. The problem is that all the sunlight is concentrated on the eyepiece, which will cause it to heat, and make it a risk to fail suddenly. If you find an eyepiece of this type or a "sun" filter for an eyepiece, it should be thrown away.

2. The Dobsonian Telescope

While we have several different types of telescopes for loan, I am going to focus on our most common, the Dobsonian, aka the "Dob." This telescope type technically refers to only the mount, *(Continued)*

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and it is named for John Dobson, a colorful character who had a passion for making astronomy accessible and affordable. Dobson's philosophy was that the optics of the scope were the most important, and money could be saved by constructing the mount that holds the optics out of common construction materials.

There are many takes on the Dobsonian, but the basic idea is that the optical tube is made of cardboard or steel, attached to a lazy-susan base typically constructed from plywood. The optical components are higher quality and typically follow the basic "Newtonian" reflector telescope design developed by Isaac Newton. This design consists of a primary mirror, secondary mirror, focuser, and a removable eyepiece.

Figure 1 One of the NJAA Dobsonian Telescopes in the field at an outreach event.

The Dobsonians are a good choice for an entry to visual observing because they are simple to aim, they move up-down and left-right. They will typically be equipped with a red dot finder or finderscope to aid in finding fainter objects. Although at first it might seem that an automated telescope equipped with a "GoTo" function would be easier, many of the "GoTo" telescopes require precise alignment, a task which is difficult to complete without a good ability to find common stars manually. Knowing how to locate objects manually is a very useful skill to have when using more complicated telescopes.

3. Observing basics

Eyepieces. As previously mentioned, telescopes have removable eyepieces. The *(Continued)*

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focal length of the eyepiece, in combination with that of the optical tube, determines the magnification. We typically supply a 25mm, and sometimes also 10mm eyepieces, with our loaner telescopes. To find the magnification, divide the focal length of the telescope by the eyepiece focal length. Since most of our telescopes have focal lengths of between 1200mm and 1500mm, a 25mm eyepiece gives us magnifications in the range of 48x to 60x. This is good place to start for deep sky observations. Higher magnifications will make the field of view smaller and make objects more difficult to find, as well as make them fainter. Lower magnification will show more of the sky and help bring out fainter objects. Viewing planets is a suitable time to go for higher magnification, as planets are quite bright and small; however, between 125x-200x is the often the practical limit for magnification based on our atmosphere conditions.

Focusing. Focusing is relatively straightforward. No matter what the magnification, stars are so far away that they should never appear to have any significant size, they should always be pinpoints. So, while looking through the telescope, turn the focuser knob either in or out until the stars are as small as you can make them. Then you will be in focus.

Aligning on objects. There are several ways to find objects. The easiest object to locate is the moon. With some practice, you usually just point the telescope directly at the moon without further assistance. For less bright or less large objects, using a finderscope or red dot finder is often necessary. A finderscope is a small telescope with a wide field of view and small (~5x typically) magnification, while the red dot finder projects a red dot or bullseye onto the sky. The **red dot finder**, like the finderscope, has the advantage of being aligned with the telescope and allowing you to simultaneously look through the red dot finder and see the full background sky; the downside of the red dot finder is that the brightness of the red dot itself can make it difficult to see anything besides the brighter stars. The finderscope will allow you to see stars below visual range, which makes comparison with star charts easier, but it will not allow for the same wide view of the sky that the red dot finder does. It is a good idea to practice finding bright stars or objects first. You can then move on to “star hopping”, where you start on a bright star, and then follow a trail of less bright stars through the red dot, finderscope, or even main telescope to the object of interest. You may need star charts or phone apps to guide this.

Star charts and phone apps. Two items useful for knowing where to look for items are star charts and phone apps. Each method has some benefits and drawbacks. For a good phone app, I would recommend Stellarium. It’s free, and based on an open-source computer program of the same name. The computer program is a very sophisticated, fully featured planetarium software, capable of performing some complicated astronomical calculations. The phone app is a subset of those features but still has some handy tricks. First, it uses the phone’s sensors to align with the sky, which can take some of the guesswork out of orienting yourself in a new place. It also can be set to estimate the effects of atmosphere and light pollution, and only show stars expected to be visible. I find that feature quite helpful, as star charts can be overwhelming at first, and sometimes they do not seem *(Continued)*

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to match the sky well in light polluted areas. Another advantage of apps is that they accurately show the position of transient objects, such as planets and comets, which can't be represented on star charts.

Figure 2 Locating the star Vega with Stellarium on a phone, the crosshair shows the location of Vega relative to where the phone is currently pointing.

There is a drawback to phone apps, and it is a big one. Using a phone will temporarily impair your night vision. Star charts, on the other hand, can work well in low red light, preserving night vision. Another advantage of star charts is that it is much easier to assess the relative positions of stars with a chart than with a phone app. This makes it easier to align on a bright star, then move in one step to the object you want to find. Personally, I found it easier to learn to find things with a phone app, although I am happy that I can also use star charts. There isn't really a right or wrong way here, just what works best for you.

4. Final thoughts

Astronomy is an exciting hobby, but good observing technique takes some time and patience to develop. There is also an aspect of "expectation management" for visual observation; you will not be able to see color on deep sky objects. Distant galaxies and nebulae will appear faint and fuzzy, not brilliantly colored as they appear in photos. It is amazing to realize, as you find galaxies, that you are looking back in time 10, 20 or even 40 million years. Light that left a distant galaxy long before humans existed can be seen with your eye.

This is why the Dobsonian telescopes are a key part of our loaner telescope program. They are good quality yet simple to use, and they help keep equipment issues to a minimum. So, if you have been thinking about giving the Telescope Loaner Program a try, now is a wonderful time to do so. It is getting dark earlier as the Fall season begins. Saturn will be visible in the evening sky for the next several months. For some more challenging targets, try to find the double star Albireo or the Andromeda Galaxy. Clear skies!